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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/038,500 | 01/02/2002 | David Castiel | 10636/005002 | 6365 |

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EXAMINER

DEAN, RAYMOND S

ART UNIT

PAPER NUMBER

2684

DATE MAILED: 11/18/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/038,500 | Applicant(s) CASTIEL ET AL. | |
| | Examiner Raymond S Dean | Art Unit 2684 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 January 2002 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>01022002</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: Figure 2c shows the flowchart, the applicant however, states on page 11 line 20 and page 12 line 17 that said flowchart is Figure 2a, Figure 2c shows reference character 340 for the controlling antenna step, the applicant however, states on page 12 line 17 of the specification that said controlling antenna step is reference character 350. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: the power drawn from supply and battery step should be labeled 354.

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Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claims 8 – 10 are rejected under 35 U.S.C. 102(a) as being anticipated by Porcelli et al. (WO 98/51022).

Regarding Claim 8, Porcelli teaches a communication system, comprising: a plurality of ground stations on respective land masses (Page 12 lines 18 – 21, Page 13 line 1); and a plurality of satellites in elliptical orbits, said plurality of satellites being in orbits in sub-constellations (Figure 3A, Figure 3B, Page 10 lines 15 – 21), each sub-constellation having a plurality of satellites and repeating ground tracks, which repeating ground tracks are each optimized to follow a plurality of said land masses (Figure 1C,

Figure 3A, Figure 3B, Page 14 lines 14 – 17, Page 15 lines 5 – 11, the ground track covers a plurality of continents), each satellite operating only during a predetermined percentage of its orbit closest to its apogee (Page 12 lines 8 – 14).

Regarding Claim 9, Porcelli teaches all of the claimed limitations recited in Claim 8. Porcelli further teaches wherein said satellites transmit only during 60 percent of their orbit (Page 16 lines 19 – 21, Page 17 lines 1 – 2, the orbital time is 12 hours, a three satellite system will have 8 loop hours, which is approximately 60% of said orbital time).

Regarding Claim 10, Porcelli teaches all of the claimed limitations recited in Claim 8. Porcelli further teaches wherein said satellites are approximately $\frac{3}{4}$ of the height necessary for geosynchronous orbit or less (Figures 3A, 3C, when the satellites are at apogee said satellites will be closer to the earth than a geo-stationary satellite, the distance of said satellites from the earth can be $\frac{3}{4}$ the distance of said geo-stationary satellite to the earth or less).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1 – 7 and 11 – 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Porcelli et al. (WO 98/51022) in view of Cellier (US 6,327,523).

Regarding Claim 1, Porcelli teaches a satellite system, comprising: a plurality of satellites in inclined elliptical orbits, each said satellite communicating with a land mass on the Earth (Figure 3A, Figure 3B, Page 10 lines 15 – 21, the satellites will communicate with users and ground stations on the earth), at least a first group of said satellites being in common orbits having the same, first, repeating ground track communicating with plural specified land mass on the earth (Figure 1C, Figure 3A, Figure 3B, Page 14 lines 14 – 17, Page 15 lines 5 – 11, the ground track covers a plurality of continents), each said satellite communicating during only a portion of the elliptical orbit closest to apogee (Page 12 lines 8 – 14).

Porcelli does not specifically teach a second group of said satellites being in common orbits having the same, second, repeating ground track, different than said first ground track, and communicating with second plural specified land masses on the earth.

Cellier teaches a second group of said satellites being in common orbits having the same, second, repeating ground track, different than said first ground track (Column 4 lines 53 – 66), and communicating with second plural specified land masses on the earth (Figure 4, Column 4 lines 53 – 56, the ground track covers a plurality of continents).

Porcelli and Cellier both teach a satellite system comprising satellites in geostationary, inclined, elliptical orbits thus it would have been obvious to one of ordinary

skill in the art at the time the invention was made to use the second group of satellites taught in Cellier in the satellite system of Porcelli for the purpose of providing satellite coverage to a plurality of other parts of the world as taught by Cellier.

Regarding Claim 2, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein said only a portion is approximately 60% of its total orbiting time (Page 16 lines 19 – 21, Page 17 lines 1 – 2, the orbital time is 12 hours, a three satellite system will have 8 loop hours, which is approximately 60% of said orbital time).

Regarding Claim 3, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein said first land mass locations represent populated portions on the earth (Figure 1C, the ground track covers a plurality of continents, said continents comprise populated portions on the earth).

Regarding Claim 4, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 3. Cellier further teaches a third group of said satellites being in common orbits having the same, third ground track, different than said first and second ground tracks (Column 4 lines 42 – 47, each orbital plane can comprise a group IEGO satellites, said IEGO satellites will share a ground track).

Regarding Claim 5, Porcelli teaches a communication system, comprising: a plurality of ground stations, each including communication equipment for communicating with a satellite in orbit (Page 12 lines 18 – 21, Page 13 line 1, the ground stations will communicate with the operational satellite); and a plurality of satellites in respective orbits, said respective orbits including a first sub-constellation

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orbit with a plurality of satellites (Figure 3A, Figure 3B, Page 10 lines 15 – 21) therein, each of said plurality of satellites following a repeating ground track that repeats an integral number of times each day and each repeating ground track optimized for covering more than one specific land mass on the earth, including a first sub-constellation optimized for covering first land masses (Figure 1C, Figure 3A, Figure 3B, Page 14 lines 14 – 17, Page 15 lines 5 – 11, the ground track covers a plurality of continents).

Porcelli does not teach a second sub-constellation optimized for covering second land masses, and a third sub-constellation optimized for covering third land masses.

Cellier teaches a second sub-constellation optimized for covering second land masses (Figure 4, Column 4 lines 53 – 66, the ground track covers a plurality of continents) and a third sub-constellation optimized for covering third land masses. (Column 4 lines 42 – 47, each orbital plane can comprise a group IEGO satellites, which is a constellation, said IEGO satellites will share a ground track that can cover a plurality of areas on earth).

Porcelli and Cellier both teach a satellite system comprising satellites in geo-stationary, inclined, elliptical orbits thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the second and third constellation of satellites taught in Cellier in the satellite system of Porcelli for the purpose of providing satellite coverage to a plurality of other parts of the world as taught by Cellier.

Regarding Claim 6, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein the apogee of the satellites are approximately $\frac{3}{4}$ the altitude or less of geo stationary satellites (Figures 3A, 3C, when the satellites are at apogee said satellites will be closer to the earth than a geo-stationary satellite, the distance of said satellites from the earth can be $\frac{3}{4}$ the distance of said geo-stationary satellite to the earth or less).

Regarding Claim 7, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 1. Porcelli further teaches wherein each ground track covers three continents (Figure 1C, Page 15 lines 5 – 11).

Regarding Claim 11, Porcelli teaches a constellation of satellites, comprising: plurality of satellites in elliptical orbits around the earth with the earth at one focus of the elliptical orbit (Figure 3A, Figure 3B, Page 10 lines 15 – 21), and each elliptical orbit having an apogee and a perigee (Figure 3A, Figure 3B), each said satellite communicating with a portion of the Earth (Page 10 lines 15 – 21, the satellites will communicate with users and ground stations on the earth), at least a first group of said satellites being in common orbits having the same, first, ground track (Figure 3A, Figure 3B, Page 14 lines 14 – 17), wherein each of said satellites is active for only a predetermined portion of its orbiting time, closest to its apogee portion (Page 12 lines 8 – 14), and wherein the satellites in said first group are spaced such that when a first satellite in the sub-constellation reaches its inactive portion, another satellite in the sub-constellation becomes active (Page 17 lines 3 – 16).

Porcelli does not teach a second group of said satellites being in common orbits having the same, second, ground track, different than said first ground track.

Cellier teaches a second group of said satellites being in common orbits having the same, second, ground track, different than said first ground track (Column 4 lines 53 – 66).

Porcelli and Cellier both teach a satellite system comprising satellites in geostationary, inclined, elliptical orbits thus it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the second group of satellites taught in Cellier in the satellite system of Porcelli for the purpose of providing satellite coverage to a plurality of other parts of the world as taught by Cellier.

Regarding Claim 12, Porcelli in view of Cellier teaches all of the claimed limitations recited in Claim 11. Cellier further teaches wherein a first satellite is descending when it becomes inactive, and another satellite is ascending when it becomes active (Column 4 lines 60 – 66).

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond S Dean whose telephone number is 703-305-8998. The examiner can normally be reached on 7:00-3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nay A Maung can be reached on 703-308-7745. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Raymond S. Dean
November 2, 2004



NAY MAUNG
SUPERVISORY PATENT EXAMINER